GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-271592

May 29, 1996

The Honorable John Glenn
Ranking Minority Member
Committee on Governmental Affairs
United States Senate

Dear Senator Glenn:

On February 28, 1996, we presented our concerns about the U.S. international nuclear materials tracking system at hearings before the Senate Committee on Governmental Affairs on the proposed Agreement for Cooperation Between the United States of America and the European Atomic Energy Community Concerning Peaceful Uses of Atomic Energy (U.S.-EURATOM agreement). On March 1, 1996, we reported on whether the proposed U.S.-EURATOM agreement satisfies certain requirements for nuclear cooperation agreements under the Atomic Energy Act of 1954, as amended, and other issues of importance associated with the proposed agreement.[1] This report responds to your March 7, 1996, letter requesting further information on the U.S. international nuclear materials tracking system and the proposed U.S.-EURATOM agreement. Specifically, you asked us to provide additional information on (1) the adequacy of the Department of Energy's (DOE) international nuclear materials tracking system, (2) the adequacy of international physical security standards for U.S. nuclear materials, (3) the transfer of sensitive nuclear technology, and (4) our assessment of the proposed U.S.-EURATOM agreement as discussed in our March 1, 1996, report.

Nuclear trade between the United States and the European Atomic Energy Community (EURATOM) has been governed since 1958 by an agreement for cooperation that expired at midnight on December 31, 1995. On November 29, 1995, the President transmitted the proposed U.S.-EURATOM agreement to the Congress. According to a State Department official, the U.S.-EURATOM agreement became effective on April 12, 1996.

[1]GAO/RCED-96-77R, Proposed U.S.-EURATOM Agreement.

THE U.S. INTERNATIONAL NUCLEAR MATERIALS TRACKING SYSTEM

You asked us to respond to DOE's testimony that the nuclear materials tracking system is "not so bad after all." We continue to believe that the nuclear materials tracking system is significantly limited in its ability to track nuclear materials internationally and that the replacement system faces a high probability of failure because it has not been completely developed and tested. We are now preparing a letter to the Secretary of Energy summarizing our concerns with the operational capability of the new tracking system, as discussed in our February 28, 1996, testimony, and underscoring the need for DOE to thoroughly examine the performance of the nuclear materials tracking system and take the necessary measures to ensure its successful operation. You asked what further action could be taken to ensure that DOE is more responsive to our recommendations to correct the problems in the international nuclear materials tracking system. One possible option would be to hold oversight hearings on the adequacy of the tracking system. Corrective actions, based on the results of a hearing, could then be specified in legislation.

You also asked whether we are satisfied that the discrepancies we found in the databases of the Department of Commerce, the Nuclear Regulatory Commission (NRC), and DOE have been satisfactorily resolved. Our discussions with DOE and Commerce officials disclosed no actions being taken to resolve the reported discrepancies, and we know of no plans by these agencies to take such actions.

INTERNATIONAL PHYSICAL SECURITY STANDARDS FOR NUCLEAR MATERIALS

You asked whether upgrades of NRC's physical security standards would apply to EURATOM and, if not, whether the existing standards would satisfy physical security requirements. According to NRC's Director, Division for Nonproliferation, Exports, and Multilateral Relations, and other NRC officials, upgrades of NRC's physical security requirements would not apply to EURATOM unless they were reflected in the International Atomic Energy Agency's (IAEA) physical security guidelines (INFCIRC 225). According to NRC officials, article 11 of the U.S.-EURATOM agreement establishes IAEA's guidelines as the benchmark for determining whether adequate physical protection has been achieved. This approach, the officials said, is consistent with the approach set forth in other agreements for cooperation.

According to NRC officials, during export licensing reviews under section 123 of the Atomic Energy Act, NRC and other reviewing agencies use satisfaction of IAEA's physical security guidelines as the criterion for approving the physical

protection afforded by a recipient government. If NRC or another agency believed the international guidelines should be upgraded, they would request the State Department to recommend this action to IAEA. To date, IAEA's physical security guidelines have gone through three revisions.

According to NRC officials, if a serious concern arose at NRC or elsewhere in the U.S. government about the adequacy of the physical protection afforded by EURATOM to U.S.-supplied or U.S.-produced nuclear material, the United States could request immediate consultations with EURATOM to address the problem. If the matter were not promptly addressed, the agreement provides that additional steps could be taken.

You asked about the adequacy of international physical protection guidelines to protect against terrorist attacks on the scale of the bombings at the World Trade Center and at Oklahoma City. We did not evaluate the adequacy of the international guidelines to protect against such threats.

THE TRANSFER OF SENSITIVE NUCLEAR TECHNOLOGY

You asked us to identify the legal basis for the statement in our March 1, 1996, report that sections 127 and 128 of the Atomic Energy Act of 1954, as amended, constitute an alternative authority for transferring sensitive nuclear technology. You questioned why, if transfers of sensitive nuclear technology are authorized under sections 127 and 128, the nuclear cooperation agreement between the United States and Sweden contained a provision that sensitive nuclear technology may be transferred if provided for by an amendment to that agreement or by a separate agreement.

Subsection 123(a)(9) of the act[2] requires agreements for cooperation to contain a provision that all of the requirements in section 123(a) will be applied to any special nuclear material, production facility, or utilization facility produced or constructed by or through the use of U.S.-origin sensitive nuclear technology transferred under an agreement for cooperation [emphasis added]. However, section 123 does not expressly require that transfers of sensitive nuclear technology occur only under a cooperation agreement.

Transfers of sensitive nuclear technology outside an agreement for cooperation are authorized by section 57(b)[3] of the act, as implemented by regulations that

---

[2]42 U.S.C. 2153(a)(9).

[3]42 U.S.C. 2077(b).

incorporate the requirements of sections 127 and 128. Section 57(b) authorizes activities related, directly or indirectly, to the production of special nuclear material under two conditions: (1) as specifically authorized under an agreement for cooperation pursuant to section 123 of the act or (2) upon authorization by the Secretary of Energy after a determination that such activity will not be inimical to the interest of the United States. Under DOE's regulations implementing this section, transfers of sensitive nuclear technology are among the activities covered by section 57(b). The regulations provide that certain activities are generally authorized provided no sensitive nuclear technology is transferred and that specific authorization of the Secretary is required before providing sensitive nuclear technology for an activity in any foreign country.[4] The regulations[5] also set forth the conditions necessary for the Secretary to grant specific authorization, including a requirement that transfers of sensitive nuclear technology meet the requirements of sections 127 and 128 of the act.

Sections 127 and 128 of the act[6] set forth the criteria that govern U.S. nuclear exports generally, including sensitive nuclear technology. In brief, the export criteria in section 127 are the applicability of IAEA's safeguards to the materials to be exported; a prohibition against the use of the materials for military purposes (i.e., for the use in or for research and development involving "any nuclear explosive device"); the maintenance of adequate physical security measures; the prior approval of the United States for retransfers to third countries and for reprocessing; and a prohibition against the export of sensitive nuclear technology unless all of these conditions are applied to any nuclear material or equipment produced or constructed through the use of such exported sensitive nuclear technology. Section 128(a) requires, in addition, that IAEA's safeguards be applied to all peaceful nuclear activities of recipient nonnuclear-weapon states.

Accordingly, the legal basis for our finding that sections 127 and 128 provide an alternative means of transferring sensitive nuclear technology is the application of their criteria to transfers of sensitive nuclear technology authorized under section 57(b). We cannot say why the agreement between the United States and Sweden included language providing that sensitive nuclear technology may be transferred if provided for by an amendment or by a separate agreement.

---

[4]10 C.F.R. 810.7 and 810.8(b).

[5]10 C.F.R. 810.10(c).

[6]42 U.S.C. 2156 and 2157.

GAO'S ASSESSMENT OF THE PROPOSED U.S.-EURATOM AGREEMENT AS REPORTED IN RCED-96-77R

In our March 1, 1996, assessment of the proposed U.S.-EURATOM agreement, we reported that in our 1988 opinion on the then-proposed U.S.-Japan nuclear cooperation agreement, we stated that section 123 of the act does not require consents to be in any particular form. Our review of the act and its legislative history led us to believe that the Congress had anticipated that section 123 approvals for retransfers, reprocessing, and storage of U.S.-origin, weapons-usable nuclear materials would be provided on a request-by-request basis. Nevertheless, we found no provision in the act that expressly limits approvals associated with these activities to any particular process or that specifically precludes the inclusion of advance, long-term approvals for these activities in cooperation agreements. However, on the basis of an analysis of the relevant legislation, its legislative history, the specific terms of the proposed cooperation agreement and its integral implementing agreement, and facts relevant to the particular circumstances of nuclear commerce between the United States and Japan at that time, we concluded that the proposed agreement with Japan did not set forth the guaranties of consent and prior approval over retransfer and reprocessing activities required by subsections 123(a)(5) and (7) of the act.

As you noted in your letter, one of our concerns about the advance, long-term consents in this first agreement for cooperation between the United States and Japan was whether the United States could make the determination required by section 131 of the act that there would be no significant increase in the risk of proliferation. We did not raise similar concerns in our assessment of the proposed U.S.-EURATOM agreement, in large part because of the long history of safe and successful internal transfers of plutonium among all EURATOM members–both nuclear- and nonnuclear-weapon states.

In preparing our assessment of the proposed U.S.-EURATOM agreement, we relied in part on the legal analysis contained in and underlying the conclusions of our 1988 opinion.[7] Our recent assessment drew a distinction between two

---

[7]We also mentioned that during the nearly 8 years since we presented to the Congress our concerns about the advance consents in the U.S.-Japan agreement and the agreement entered into force unchanged, the Congress has not amended the act to either prohibit or limit the use of advance consents and approvals in subsequent cooperation agreements. This information was noted as a factual matter, not as a suggestion that it was the basis for our agreement with the executive branch's interpretation of the act.

kinds of questions--on the one hand, questions such as whether the executive branch has the authority, through the responsible agencies, to grant advance consents for the activities set forth in section 123 and whether the terms of the proposed agreement meet the requirements of certain provisions of the act; and on the other hand, policy-based questions such as whether entering into the agreement makes sense and whether the agreement is the best possible arrangement between the parties that could have been reached.

With respect to the specific provisions in the proposed U.S.-EURATOM agreement that we were asked to review, we believe, as stated in our March 1, 1996, report, that the executive branch has the authority to grant advance consents and that the selected provisions of the agreement we reviewed met the requirements of the act. You asked us, in addition, whether the advance consents for reprocessing or retransfers in the new agreement provide for "timely warning" as required by section 131 of the act.[8]

As you know, section 131 deals with "subsequent arrangements" required to implement a cooperation agreement, and applies to certain activities that include the reprocessing and retransfer of certain U.S.-origin nuclear materials. Section 131 prohibits the Secretary of Energy from entering into a subsequent arrangement with respect to these activities unless she and the Secretary of State conclude that they "will not result in a significant increase of the risk of proliferation beyond that which exists at the time that approval is requested." The act states that among all the factors to be considered in making this determination, "foremost consideration" will be given to whether or not the reprocessing or retransfer will take place under conditions that will ensure "timely warning to the United States of any diversion well in advance of the time at which [a] non-nuclear-weapon state could transform the diverted material into a nuclear explosive device."[9]

We note that the criterion for assessing "timely warning" is subject to different interpretations. In general, the executive branch has based its timely warning analysis on a combination of political factors rather than a purely technical assessment of the capability of the recipient state to convert diverted material into a nuclear weapon before a diversion could be detected and effective diplomatic efforts taken to deter completion of a nuclear explosive device. On the other hand, others argue, on the basis of language in the legislative history of the Nuclear Nonproliferation Act, that the assessment of timely warning is to

---

[8]42 U.S.C. 2160.

[9]42 U.S.C. 2160(b)(2).

be conducted as a technical assessment without regard to diplomatic or political considerations.[10]

Because the advance consent provisions are an integral part of the new U.S.-EURATOM agreement and thus are not subsequent arrangements, they are not subject to the requirements of section 131. However, in view of their significance, and because they would be subsequent arrangements if agreed to separately from the new agreement, the reprocessing and related activities covered by the new advance consent provisions were reviewed by the pertinent agencies under section 131.

In their Memorandum for the President, the Secretaries of State and Energy concluded that the advance, long-term approval of reprocessing and related activities will not result in a significant increase of the risk of proliferation. The agencies stated that, in accordance with section 131(b), in making this judgment they gave foremost consideration to whether or not the reprocessing will take place under conditions that will ensure timely warning to the United States of any diversion of the material.[11]

The basis for this conclusion is discussed in the Secretary of Energy's analysis of the agreement. The Secretary's analysis states that "[w]hen all the relevant facts and circumstances are taken into account, it is highly probable that the United States would receive timely warning of any diversion of plutonium subject to the Agreement." The factors leading to this conclusion included EURATOM and IAEA safeguards, which are designed to detect a diversion of nuclear material before it can be used in a nuclear explosive device, and the substantial difficulties in keeping a diversion of plutonium secret, referred to as transparency. After discussing timely warning, the Secretary's analysis concludes that "U.S. consent to reprocessing and U.S. reaffirmation of its consent for the subsequent retransfer of plutonium to Japan in the Agreement would not increase the risk of proliferation." Factors taken into account in reaching this conclusion included the likelihood of timely warning of an attempted diversion, the nonproliferation and physical protection policies of the

---

[10]See B-219816, Jan. 28, 1988, and The Concept of "Timely Warning" in the Nuclear Nonproliferation Act of 1978, by Leonard Weiss, Staff Director, Senate Committee on Governmental Affairs, inserted in the Congressional Record by Senator John H. Glenn on Mar. 21, 1988.

[11]Memorandum for the President from the Secretaries of State and Energy, Sept. 25, 1995, pp. 3-4, reproduced in H. Document 138, 104th Cong., 1st Sess. 137, 138-140.

EURATOM states, and the stable security situation of the nonnuclear-weapon EURATOM states.[12]

- - - - -

In developing our answers to your questions, we interviewed an official in the State Department's Office of Nuclear Affairs and NRC's Director, Division of Nonproliferation, Exports, and Multilateral Relations, to obtain additional information about the proposed U.S.-EURATOM agreement and nuclear material physical security standards, respectively. We also reviewed the proposed U.S.-EURATOM agreement and pertinent legislation for additional information about sensitive nuclear technology.

We plan to send copies of this report to the appropriate congressional committees, the Secretaries of State and Energy, the Director of the Arms Control and Disarmament Agency, the Chairman of NRC, and other interested parties. If you or your staff have any questions about this report, please call me at (202) 512-3841.

Sincerely yours,

Victor S. Rezendes
Director, Energy, Resources,
and Science Issues

(170272)

[12]Analysis of Consents and Approvals, pp. 67-70, reproduced in H. Document 138, 104th Cong., 1st Sess. 157, 226-229.

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are $2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015

or visit:

Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000 or by using fax number (301) 258-4066, or TDD (301) 413-0006.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:

info@www.gao.gov

United States
General Accounting Office
Washington, D.C. 20548-0001

Bulk Rate
Postage & Fees Paid
GAO
Permit No. G100

Official Business
Penalty for Private Use $300

Address Correction Requested